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Mathematicians set Chinese test

Maths enthusiasts are being challenged to answer a sample question from Chinese university entrance tests.

The tests are set for prospective science undergraduates.

The UK's Royal Society of Chemistry is offering a £500 prize to one lucky but bright person who answers the question below correctly.

It has also published a test used in a "well known and respected" English university - the society is not naming it - to assess the strength of incoming science undergraduates' maths skills.

Try the two tests

A glance at the two questions reveals how much more advanced is the maths teaching in China, where children learn the subject up to the age of 18, the society says.

Science undergraduates in England are likely not to have studied maths beyond GCSE level at the age of 16, it says.

It has sounded a warning about Britain's future economic prospects which it claims are threatened by competition from scientists in China.

> **Schools and students are reluctant to consider A-level mathematics to age 18, because the subject is regarded as difficult**
>
> Richard Pike

Pupils 'urged to drop maths'

RSC chief executive Richard Pike says mathematics is seen as integral to the sciences in China and its economy.

"There, the concept of remedial courses at university would be inconceivable.

"UK chemistry departments are often world-renowned for their creativity; however, mathematics tests set in England by many universities for undergraduate chemistry students in their first term to diagnose remedial requirements are disconcertingly simple.

"They encapsulate the challenge facing this country," says Dr Pike.

But a maths professor in England, William Shaw, has said the emphasis in mathematics teaching varies from country to
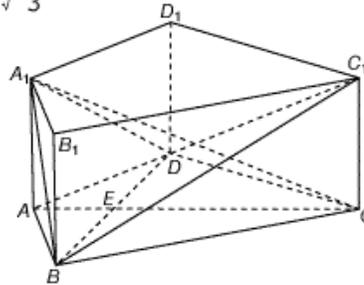
country and the RSC's attack is "nonsense".

Anyone wishing to enter the competition should go to the RSC website and send the correct answer by Friday 27 April to be included in a prize draw.

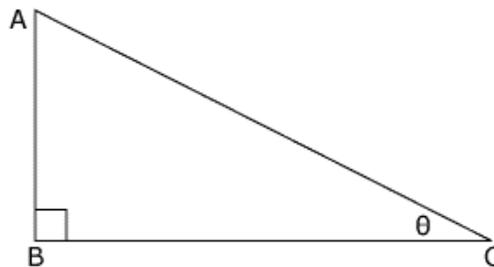**National test set by Chinese education authorities for pre-entry students**

As shown in the figure, in square prism $ABCD-A_1B_1C_1D_1$, $AB=AD=2$, $DC=2\sqrt{3}$, $AA_1=\sqrt{3}$ $AD\perp DC$, $AC\perp BD$, and foot of perpendicular is E,

(i) Prove: $BD\perp A_1C$:

(ii) Determine the angle between the two planes A_1BD and BC_1D:

(iii) Determine the angle formed by lines AD and BC_1 which are in different planes.

Diagnostic test set by an English university for first year students

In the diagram (not drawn to scale), angle ABC is a right angle, AB = 3m BC = 4m

(i) What is the length of AC

(ii) What is the area of triangle ABC (above)?

(iii) What is the $\tan\theta$ of the triangle ABC (above) as a fraction?

Source: Royal Society of Chemistry

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